

Attorney Docket No. SC12851ZP

IN THE CLAIMS:

Please cancel claims 2, 7-8, 15-18, 21-35, 38, 41-43, 45, 55, and 62-63, without prejudice or disclaimer of the subject matter recited therein.

Amend the claims as follows:

1. (Currently Amended) A method comprising:
providing a layer having a crystalline structure including silicon atoms and germanium atoms over an insulating layer;
performing a vacancy injecting process, the vacancy injecting process injecting germanium atoms and vacancies into the crystalline structure, wherein the vacancy injecting process includes forming an oxynitride layer over the layer;
removing the oxynitride layer.
2. (Canceled).
3. (Currently Amended) The method of claim 3, A method comprising:
providing a layer having a crystalline structure including silicon atoms and germanium atoms over an insulating layer;
performing a vacancy injecting process, the vacancy injecting process injecting germanium atoms and vacancies into the crystalline structure, wherein the vacancy injecting process includes performing a nitridation process, wherein the vacancy injecting process includes forming a silicon nitride layer on the layer;
removing the silicon nitride layer.
4. (Original) The method of claim 3, wherein performing the nitridation process comprises flowing ammonia over the layer, which forms a silicon nitride layer over the layer having a crystalline structure.
5. (Currently Amended) The method of claim [[4]] 3, further comprising ~~removing the silicon nitride layer, the method further comprises growing silicon oxide on the silicon-germanium layer after removing the silicon nitride layer.~~

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6. (Currently Amended) The method of claim [[1]] 3, further comprising growing silicon oxide on the layer.

7-8. (Canceled)

9. (Original) The method of claim 6, further comprising removing at least a portion of the silicon oxide.

10. (Currently Amended) The method of claim 9, wherein the ~~vacancy-injecting nitridation~~ process is performed after the removing at least a portion of the silicon oxide.

11. (Currently Amended) The method of claim 1, wherein the ~~vacancy-injecting process forming the oxynitride layer further~~ comprises:

implanting nitrogen into the layer; and
growing an oxynitride layer on the layer.

12. (Original) The method of claim 11, wherein growing the oxynitride layer, comprises flowing oxygen over the layer after implanting nitrogen into the layer.

13. (Original) The method of claim 1, further comprising epitaxially growing strained silicon on the layer after injecting germanium and injecting vacancies to form a strained silicon layer.

14. (Currently Amended) ~~The method of claim 1, A method comprising: providing a layer having a crystalline structure including silicon atoms and geranium atoms over an insulating layer;~~
~~performing a vacancy injecting process, the vacancy injecting process injecting germanium atoms and vacancies into the crystalline structure, wherein the vacancy injecting process comprises:~~

~~forming a metal layer over the layer, the metal layer [[that]] is reactive with silicon atoms on the layer; and~~

~~heating the metal layer to cause the metal layer to react with silicon atoms in the layer;~~

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removing the metal layer after the heating.

15-18. (Canceled)

19. (Original) The method of claim 1 wherein the vacancy injecting process includes an oxynitridation process.

20. (Original) The method of claim 19 wherein the vacancy injecting process includes flowing at least one of ammonia and oxygen, nitric oxide, and nitrous oxide over the layer.

21 -35. (Canceled)

36. (Currently Amended) The method of claim [[35]] 14, wherein the metal layer comprises titanium.

37. (Currently Amended) The method of claim [[21]] 3, further comprising:
growing an oxide layer on the crystalline structure;
removing at least a portion of the oxide layer;
wherein the vacancy injecting process is preformed prior to the growing the oxide layer.

38. (Canceled)

39. (Currently Amended) The method of claim [[37]] 3, further comprising:
growing an oxide layer on the crystalline structure;
removing at least a portion of the oxide layer;
wherein the vacancy injecting process is performed after the removing of at least a portion of the oxide layer.

40. (Currently Amended) The method of claim [[21]] 1, wherein the semiconductor layer further comprises carbon.

41-43. (Canceled)

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44. (Currently Amended) A method comprising:
providing a semiconductor on insulator (SOI) substrate with a top semiconductor layer
having a crystalline structure comprising atoms of a first type and a second type;
forming material on the crystalline structure using a process that consumes atoms of the
first type in a way that injects vacancies into the crystalline structure wherein
vacancies recombine with atoms including atoms of the second type; and
forming a second semiconductor layer comprising atoms of the first type on the crystalline
structure, the second semiconductor layer being characterized as strained;
removing the material prior to the forming the second semiconductor layer.
45. Canceled.
46. (Original) The method of claim 44, further comprising:
growing an oxide on the crystalline structure;
removing at least a portion of the oxide prior to the forming the second semiconductor
layer.
47. (Original) The method of claim 44 wherein the growing the oxide and the removing at least
a portion of the oxide are performed prior to the forming material on the crystalline structure.
48. (Original) The method of claim 44 wherein the growing the oxide and the removing at least
a portion of the oxide are performed after to the forming the material on the crystalline structure.
49. (Original) The method of claim 44, wherein forming the material comprises growing a
nitride layer on the crystalline structure.
50. (Currently Amended) The method of claim 44, wherein forming the material comprises:
forming a metal layer that is reactive with atoms of the first type on the crystalline
structure; and
reacting the metal layer with the crystalline structure to form the material.

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51. (Original) The method of claim 44, wherein forming the material comprises growing an oxynitride layer on the crystalline structure.
52. (Original) The method of claim 44, wherein forming the material comprises:
implanting nitrogen into the crystalline structure; and
growing an oxynitride layer on the crystalline structure.
53. (Original) The method of claim 44, wherein the first type is silicon and the second type is germanium.
54. (Original) The method of claim 44, wherein forming the material comprises growing an oxide layer on the crystalline structure.
55. (Canceled)
56. (Original) A method, comprising:
providing a silicon germanium layer having a crystalline structure over an insulating layer;
growing an oxide layer on the crystalline structure;
removing at least a portion of the oxide layer;
forming a first layer on the crystalline structure;
removing the first layer; and
forming a silicon layer on the crystalline structure after the removing at least a portion of the oxide layer and the removing the first layer.
57. (Original) The method of claim 56, wherein forming the silicon layer comprises epitaxially growing the silicon layer.
58. (Original) The method of claim 56, wherein forming the first layer comprises growing a nitride layer on the crystalline structure.
59. (Original) The method of claim 56, wherein forming the first layer comprises growing an oxynitride layer on the crystalline structure.

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60. (Original) The method of claim 56, wherein forming the first layer comprises:
depositing a metal layer; and
reacting the metal layer with the crystalline structure.
61. (Original) The method of claim 56, wherein forming the first layer and the oxide layer further comprises:
implanting nitrogen into the crystalline structure; and
growing oxynitride on the crystalline structure.
- 62- 63. (Canceled)
64. (New) The method of claim 1 further comprising:
forming a layer of strained silicon over the layer using the layer as a template layer after the removing the oxynitride layer.
65. (New) The method of claim 2 further comprising:
forming a layer of strained silicon over the layer using the layer as a template layer after the removing the silicon nitride layer.
66. (New) The method of claim 14 further comprising:
forming a layer of strained silicon over the layer using the layer as a template layer after the removing the metal layer.
67. (New) A method, comprising:
providing a first semiconductor layer including silicon and germanium and having a crystalline structure over an insulating layer;
forming an oxynitride layer over the crystalline structure, wherein the forming includes using a process that consumes a portion of the first semiconductor layer;
removing the oxynitride layer;
forming a second semiconductor layer including silicon over the crystalline structure after the removing the oxynitride layer.

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68. (New) The method of claim 67 wherein the forming the second semiconductor layer includes using the first semiconductor layer as a template.
69. (New) The method of claim 67 wherein the forming an oxynitride layer further includes:
implanting nitrogen into the first semiconductor layer;
performing an oxidation process on the first semiconductor layer.
70. (New) The method of claim 67 wherein the forming the oxynitride layer further includes performing an oxynitridation process.
71. (New) The method of claim 67 wherein the oxynitridation process includes flowing at least one of ammonia and oxygen, nitric oxide, and nitrous oxide over the first semiconductor layer.
72. (New) The method of claim 67 wherein the first semiconductor layer is characterized as being relatively more relaxed after the forming the oxynitride layer than before the forming the forming the oxynitride layer.
73. (New) The method of claim 67 wherein the second semiconductor layer is characterized as a strained layer.